

Measuring of Water Level in underground using sensors and GSM

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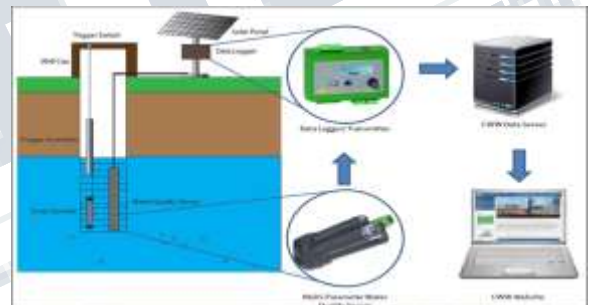
Abstract: In this paper we introduce the notion of water level monitoring and management within the context of electrical conductivity of the water. More specifically, we investigate the microcontroller based water level sensing and controlling in a wired and wireless environment. Moreover, cellular phones with relative high computation power and high quality graphical user interface became available recently. From the users perspective it is required to reuse such valuable resource in a mobile application. Finally, we proposed a web and cellular based monitoring service protocol would determine and Ultrasonic senses water level globally.

I. INTRODUCTION

Sustainability of available water resource in many reason of the world is now a dominant issue. This problem is quietly related to poor water allocation, inefficient use, and lack of adequate and integrated water management. Water is commonly used for agriculture, industry, and domestic consumption. Therefore, efficient use and water monitoring are potential constraint for home or office water management system. Last few decades several monitoring system integrated with water level detection have become accepted. Measuring water level is an essential task for government and residence perspective. In this way, it would be possible to track the actual implementation of such initiatives with integration of various controlling activities. Therefore, water controlling system implementation makes potential significance in home applications. The existing automated method of level detection is described and that can be used to make a device on/off. Moreover, the common method of level control for home appliance is simply to start the feed pump at a low level and allow it to run until a higher water level is reached in the water tank. This is not properly supported for adequate controlling system. Besides this, liquid level control systems are widely used for monitoring of liquid levels, reservoirs, silos, and dams etc. Usually, this kind of systems provides visual multi level as well as continuous level indication. Audio visual alarms at desired levels and automatic control of pumps based on user's requirements can be included in this management system. Proper monitoring is needed to ensure water sustainability is actually being reached, with disbursement linked to sensing and automation. Such programmatic approach entails microcontroller based automated water level sensing and controlling. This paper is organized in the following ways. Chapter two concentrated with the basic concepts of the system design. In chapter three we described the concrete idea of Atmega 328P. Design and

Implementation part is described in chapter four. Chapter five describes about our proposed monitoring and controlling network.

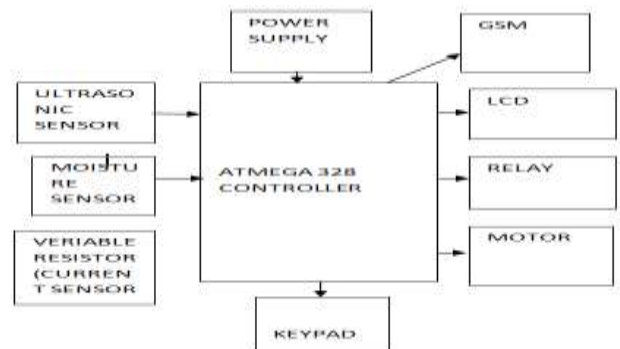
II. EXESTING SYSTEM MODE



When Overhead Tank gets empty, then Water Pump will turn ON, conditionally there is minimum level of water in Underground Water. When Overhead Tank gets Full or Underground Tank gets empty, then Pump will Turn OFF.

III. PROPOSED SYSTEM

BLOCK DIAGRAM



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DETAILS OF HARDWARE COMPONENTS

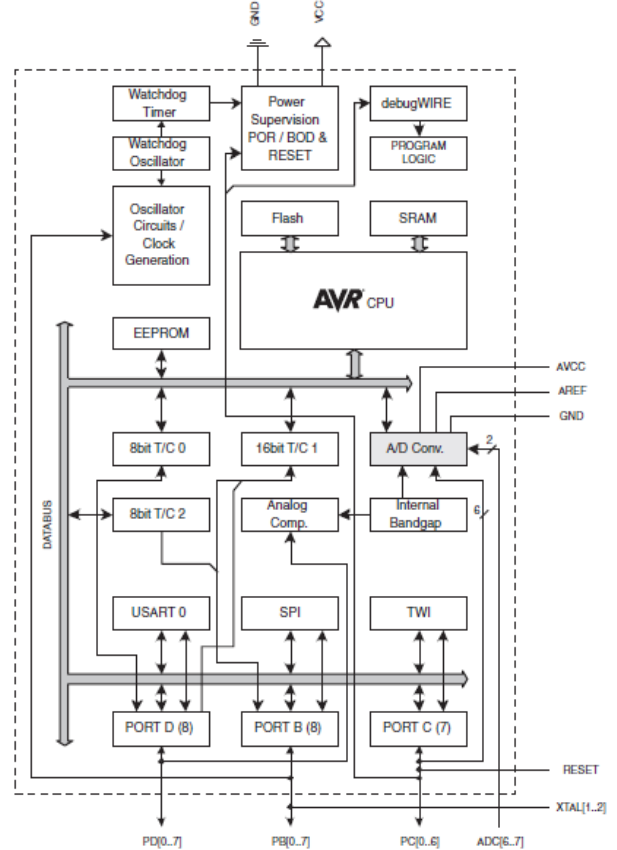
MOISTURE SENSOR: How Soil Water Moisture Sensor Systems Work

Most soil moisture sensors are designed to estimate soil volumetric water content based on the dielectric constant (soil bulk permittivity) of the soil. The dielectric constant can be thought of as the soil's ability to transmit electricity. The dielectric constant of soil increases as the water content of the soil increases. This response is due to the fact that the dielectric constant of water is much larger than the other soil components, including air. Thus, measurement of the dielectric constant gives a predictable estimation of water content. For more information on soil moisture sensors see, Field Devices for Monitoring Soil Water Content

Bypass type soil moisture irrigation controllers use water content information from the sensor to either allow or bypass scheduled irrigation cycles on the irrigation timer (Figures 1 and 2). The SMS controller has an adjustable threshold setting and, if the soil water content exceeds that setting, the event bypassed. The soil water content threshold is set by the user. Another type of control technique with SMS devices is "on-demand" where the controller initiates irrigation at a low threshold and terminates irrigation at a high threshold. The "on-demand" SMS controller concept is discussed in What Makes an Irrigation Controller Smart?



ATMEGA CONTROLLER: block diagram of atmega 328p

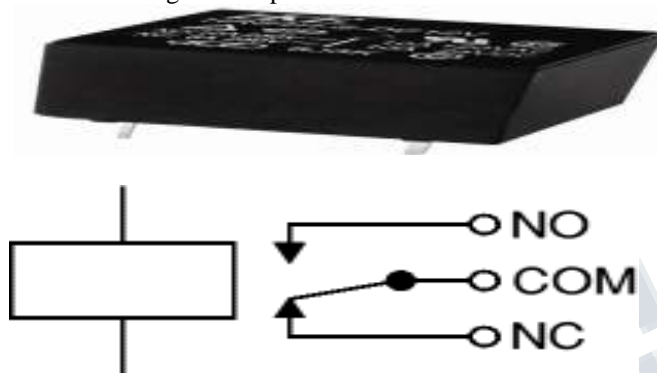


Architecture is more code efficient while achieving throughputs up to ten times faster than conventional CISC microcontrollers. The ATmega48PA/88PA/168PA/328P provides the following features: 4K/8K bytes of In-System Programmable Flash with Read-While-Write capabilities, 256/512/512/1K bytes EEPROM, 512/1K/1K/2K bytes SRAM, 23 general purpose I/O lines, 32 general purpose working registers, three flexible Timer/Counters with compare modes, internal and external interrupts, a serial programmable USART, a byte-oriented 2-wire Serial Interface, a SPI serial port, a 6-channel 10-bit ADC (8 channels in TQFP and QFN/MLF packages), a programmable Watchdog Timer with internal Oscillator, and five software selectable power saving modes. The Idle mode stops the CPU while allowing the SRAM, Timer/Counters, USART, 2-wire Serial Interface, SPI port, and interrupt system to continue functioning. The Power-down mode saves the register

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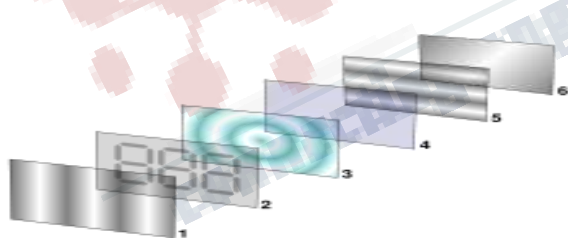
contents but freezes the Oscillator, disabling all other chip functions until the next interrupt or hardware reset.

RELAYS: A relay is an electrically controllable switch widely used in industrial controls, automobiles and appliances. The relay allows the isolation of two separate sections of a system with two different voltage sources i.e., a small amount of voltage/current on one side can handle a large amount of voltage/current on the other side but there is no chance that these two voltages mix up.



OPERATION: When current flows through the coil, a magnetic field is created around the coil i.e., the coil is energized. This causes the armature to be attracted to the coil. The armature's contact acts like a switch and closes or opens the circuit. When the coil is not energized, a spring pulls the armature to its normal state of open or closed. There are all types of relays for all kinds of applications.

LCD (LIQUID CRYSTAL DISPLAY):

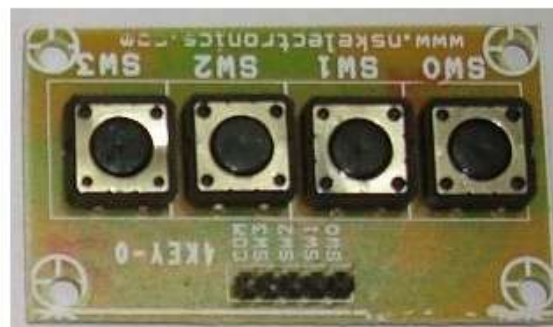


LCD display A liquid crystal display is a flat panel display, electronic visual display, or video display that uses the light modulating properties of liquid crystals. Liquid crystals do not emit light directly. LCDs are available to display arbitrary images (as in a general-purpose computer display) or fixed images which can be displayed or hidden, such as preset words, digits, and 7-segment displays as in a digital clock. They use the same basic technology, except that arbitrary

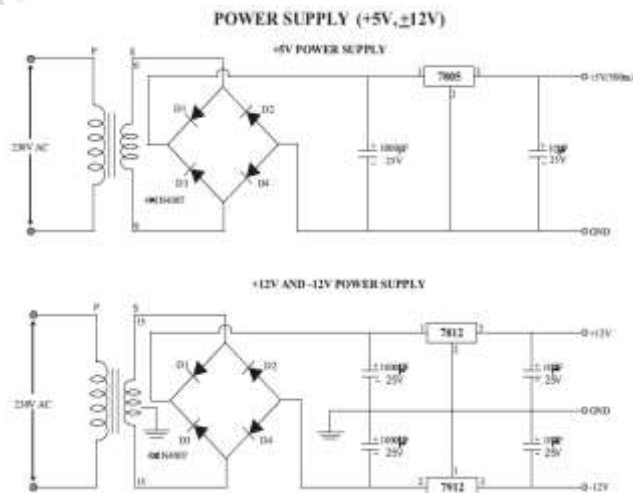
images are made up of a large number of small pixels, while other displays have larger elements. LCDs are used in a wide range of applications including computer monitors, televisions, instrument panels, aircraft cockpit displays, and signage. They are common in consumer devices such as video players, gaming devices, clocks, watches, calculators, and telephones, and have replaced cathode ray tube (CRT) displays in most applications. They are available in a wider range of screen sizes than CRT and plasma displays, and since they do not use phosphors, they do not suffer image burn-in. LCDs are, however, susceptible to image persistence **KEY PAD (4X1 MATRIX):**

Figure 1 shows a functional block diagram of the keyboard interface. As seen in this diagram, there are two major parts.

- Interrupt & interfacing Circuitry - generates interrupt to EZ328 when there is a key pressed and provides connection to EZ328's I/O ports
- Keyboard matrix - a 4x1 matrix keypad



POWERSUPPLY:



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The AC voltage, typically 220V RMS, is connected to a transformer, which steps that AC voltage down to the level of the desired DC output. A diode rectifier then provides a full-wave rectified voltage that is initially filtered by a simple capacitor filter to produce a DC voltage. This resulting DC voltage usually has some ripple or AC voltage variation.

A regulator circuit removes the ripples and also remains the same DC value even if the input DC voltage varies, or the load connected to the output DC voltage changes. This voltage regulation is usually obtained using one of the popular voltage regulator IC units

GSM MODEL



Features of GSM Kit:

this gsm modem is a highly flexible plug and play quad band gsm modem for direct and as integration to rs232.

- supports features like voice, data/fax, sms, gprs and integrated tcp/ip stack.
- control via at commands.
- use ac – dc power adaptor with following ratings • dc voltage : 12v /1a.
- current consumption in normal operation 250ma, can rise up to 1amp while transmission.
- Designed for global market, sim300 is a tri-band gsm/gprs engine that works on frequencies egsm 900 mhz, dcs 1800 mhz and pcs1900 mhz. Sim300 provides gprs multi-slot class 10 capability and support the gprs coding schemes cs-1, cs-2, cs-3 and cs-4.
- With a tiny configuration of 40mm x 33mm x 2.85 mm , sim300 can fit almost all the space requirement in your application, such as smart phone, pda phone and other mobile device

IV. ADVANTAGES

- PREVENTS MOTOR DAMAGE
- LESS CONSUMPTION OF ELECTRICITY
- PROPER USAGE OF WATER RESOURCE

- MAINTENANCE COST IS LOW
- AFFORDABLE

V. FUTURE WORK

Here in our system the message passing is done through gsm in future it can be done use iot also

As a part cloud can also be used for the networking.

The motor what is used in project is for domestic purpose it can be implemented for large motors for industrial area and etc.

VI. CONCLUSION

In this proposed system the underground water measuring is done according to in increase and decrease of water in hr underground hence the motor does not get affected and also as the water level is low the message to turn off the motor is send to the person through gsm.

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